Goal Disengagement, Well-Being, and Goal Achievement in Romantic Couples Pursuing Health Behavior Change: Evidence from Two Daily Diary Studies

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Abstract: BACKGROUND: Withdrawing effort and commitment from important goals (i.e. goal disengagement) has been discussed as an effective aspect of goal adaption. However, studies have focused especially on between-person differences. The present studies aimed to investigate within-person differences in goal disengagement within a dyadic context of romantic couples. Across two different health behaviors, we specifically tested whether goal disengagement would be associated with better well-being, but lower goal achievement in everyday life. METHODS: In two dyadic daily diary studies (Study 1: 61 overweight couples aiming to become physically active; Study 2: 83 dual-smoker couples aiming to quit smoking), both partners independently reported on goal disengagement, positive and negative affect. Behavioral goal achievement was measured via accelerometer (Study 1) and self-report (Study 2). RESULTS: Analyses based on the Actor-Partner Interdependence Model revealed that across both studies, one's own goal disengagement was related to lower well-being and a lower likelihood for goal achievement on a daily level (actor effects). Only in Study 1 were partner effects on negative affect and goal achievement found. CONCLUSIONS: In daily life, goal disengagement may not be as adaptive for well-being and goal achievement in health behavior change. Dyadic associations were not consistent, and might be more context-sensitive.

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Goal disengagement, well-being and goal achievement in romantic couples pursuing health behavior change: Evidence from two daily diary studies

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ABSTRACT

Background: Withdrawing effort and commitment from important goals (i.e., goal disengagement) has been discussed as an effective aspect of goal adaption. However, studies have focused especially on between-person differences. The present studies aimed to investigate within-person differences in goal disengagement within a dyadic context of romantic couples. Across two different health behaviors, we specifically tested whether goal disengagement would be associated with better well-being, but lower goal achievement in everyday life.

Methods: In two dyadic daily diary studies (Study 1: 61 overweight couples aiming to become physically active; Study 2: 83 dual-smoker couples aiming to quit smoking), both partners independently reported on goal disengagement, positive and negative affect. Behavioral goal achievement was measured via accelerometer (Study I) and self-report (Study II).

Results: Analyses based on the Actor-Partner Interdependence Model revealed that across both studies, one's own goal disengagement was related to lower well-being and a lower likelihood for goal achievement on a daily level (actor effects). Only in Study I, partner effects on negative affect and goal achievement were found.

Conclusions: In daily life, goal disengagement may not be as adaptive for well-being and goal achievement in health behavior change. Dyadic associations were not consistent, and might be more context-sensitive.

Keywords: goal disengagement, well-being, health behavior change, couples, daily life, APIM

Leading a healthy lifestyle is critical for health and well-being (Steptoe, Gardner, & Wardle, 2010). Physical inactivity and smoking, for example, remain two of the biggest public health threats worldwide and are key risk factors for life-threatening diseases such as cardiovascular diseases and cancer (Mozaffarian et al., 2016). Worldwide, one in four adults is not sufficiently physically active and tobacco kills around six million people each year (World Health Organization WHO, 2016a, 2016b). Thus, smoking cessation and the adoption of regular physical activity are relevant health behavior changes. According to the current guidelines, adults should engage in at least 150 minutes of moderate-intensity physical activity, and all activity should be performed in bouts lasting 10 or more minutes in duration (e.g., World Health Organization WHO, 2016a). Yet, consistently engaging in healthy behaviors is a challenging task and requires substantial self-regulatory effort from individuals (Maes & Karoly, 2005). Most commonly, researchers focus on self-regulation techniques that promote successful goal attainment, such as self-efficacy, planning, or action control (e.g., Berli et al., 2015). However, the persistent pursuit of goals forms only one part of self-regulation. More recent research proposes that sometimes the exact opposite, the capacity to disengage from one's personal goals, could be an effective form of self-regulation (Wrosch et al., 2003). The aim of the present studies was to extend this literature to the context of health behavior change, and investigate the link between goal disengagement, well-being and behavioral goal achievement in everyday life, and within a dyadic context of romantic couples.

Goal disengagement as a self-regulation strategy

It is not always possible for people to attain their goals. Goal disengagement is the capacity to withdraw effort and commitment from goals that are no longer feasible or maladaptive (Wrosch et al., 2003). By preventing accumulated failure and freeing resources for different goals, goal disengagement can be seen as an adaptive tendency (Wrosch & Sabiston, 2013). Disengagement from goals plays a crucial role in effective self-regulation

dealing with limited resources and numerous goals. Individuals may avoid wasting effort by dropping a certain goal while pursuing others (Shah, 2005). In regulating the negative consequences associated with unattainable goals (e.g., feelings of distress), the capacity to disengage from goals is assumed to relate to better subjective well-being (Wrosch, Scheier, & Miller, 2013; Wrosch et al., 2003). Goal disengagement should particularly relieve negative distress, however in providing resources necessary for pursuing new goals, it should also improve positive aspects of subjective well-being (Wrosch et al., 2013).

Empirical evidence from cross-sectional and longitudinal studies suggests that goal disengagement is linked with reduced levels of psychological distress (i.e., Miller & Wrosch, 2007; Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch & Sabiston, 2013; Wrosch et al., 2003). Moreover, goal disengagement has been linked to indicators of physical health, such as more normative patterns of cortisol secretion, fewer symptoms of everyday illness and lower inflammation values (Miller & Wrosch, 2007; Wrosch et al., 2007; Wrosch et al., 2003). Beneficial outcomes of goal disengagement have also been reported in the context of stressful life events. Wrosch & Sabiston (2013) for example investigated goal disengagement, well-being and health among female breast cancer survivors and found that goal disengagement capacity significantly predicted lower levels of negative affect, and had beneficial effects on breast cancer survivors' positive affect and physical health by facilitating adaptive levels of physical activity. The authors assume that in freeing resources by disengaging from a personal goal, positive health behaviors might become more likely. Now what if the personal goal consists in engaging in a healthy behavior? Pursuing healthy lifestyles in daily life is for many an important, but challenging personal goal. The relevance of goal disengagement from specific health-related goals (e.g., giving up smoking) has received much less attention. As Wrosch et al. (2013) pointed out, goal disengagement involves the withdrawal of both *behavioral efforts* and psychological commitment from the pursuit of an unattainable goal. Thus, disengagement should directly impact the behavior involved in pursuing the goal, for

example by inhibiting a targeted health behavior. However, whether goal disengagement relates relatively immediate to the achievement of such a goal has not been tested so far.

Goal disengagement in daily life

Although previous studies have focused on individual (between-person) differences of goal disengagement (goal disengagement as a *capacity*), Wrosch et al. (2003) proposed that goal disengagement has positive effects within persons, that is if an individual disengages from a goal he or she should experience better well-being. Yet, despite the self-regulatory significance of goal disengagement as a within-person process, relatively little is known about such within-person effects in daily life. So far, only one study has shifted the center of attention away from studying individual differences in goal disengagement to the within-person level (König, Van Eerde, & Burch, 2010). The consequences of daily fluctuations of goal disengagement as part of a broader concept of goal adaptation differed from the previous studies on goal disengagement as an individual difference. Results showed that daily goal adaptation was related to less (instead of more) well-being in a work and occupational related context (König et al., 2010). Due to the lack of other studies in daily life, it however remains unclear whether this divergent finding is unique to the work context or whether it holds across other domains. Therefore, the present studies followed up on this idea and investigated whether daily fluctuations in disengagement from specific health-related goals would predict better daily well-being and lower behavioral goal achievement by examining data from two daily diary studies in the context of health behavior change.

A dyadic perspective

How people regulate their behaviors has mostly been studied in individuals. In daily life, however, most people are embedded in close relationships (Laurenceau & Bolger, 2012), and relationship partners can shape the way people pursue their goals (Shah, 2005). Studies with couples allow examining the links of individual processes within close relationships (Laurenceau & Bolger, 2012).

There is evidence that couples influence each other's health behavior (Jackson, Steptoe, & Wardle, 2015). Jackson et al. (2015) for example found that when one partner changed to a healthier behavior in the domains of smoking, physical activity and weight loss, the other partner was more likely to make a positive health behavior change. Similarly, studies showed that having an obese spouse increased the probability by 37% to become obese as well (Christakis & Fowler, 2007), and having a smoking partner increased the probability to start smoking in newly weds (Homish & Leonard, 2005). Such influence could for example be due to the fact that each partner's health behavior is determined not only by one's own actions, but also those of one's partner. This emphasizes the importance of the couple as a unit of conceptualization and analysis (cf., Lewis et al., 2006). However, research on self-regulation of health behaviors has barely considered such dyadic influences of individual-level processes. Only recently, individual predictors of behavioral intentions regarding physical activity were examined within a dyadic framework (Howland et al., 2016). The present study proposes that goal disengagement in one partner could independently contribute to the other partner's affective and behavioral outcome, and should thus be tested within a dyadic framework.

Aim of the present research

The present studies aimed at refining our understanding of goal disengagement as an adaptive self-regulation process in daily life, and more specifically in the context of romantic couples pursuing a health behavior change. We investigated the daily associations between behavior-specific goal disengagement, well-being and behavioral goal achievement in dyads in two different health contexts: (1) obese couples with the goal to become physically active (adopting a health-enhancing behavior), (2) dual-smoker couples with the goal to quit smoking on a joint self-set quit date (giving up a health-compromising behavior).

(*Figure* 1)

Figure 1 shows the conceptual model of the present study. Using a within-person perspective, we hypothesized that as theoretically proposed (cf., Wrosch et al., 2003) individuals' higher goal disengagement was associated with a) better well-being (more positive affect and less negative affect), and b) a lower likelihood of behavioral goal achievement, that is a lower likelihood of engaging in the respective health behavior (actor effects). Furthermore, we exploratively tested for the presence of partner effects in both set of outcomes (i.e., higher goal disengagement in individuals' partners independently predict individuals' outcomes).

Data Analysis of the two studies

Data from heterosexual couples were analyzed using the Actor-Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006). Actor (the individual) and partner (the individual's partner) reports of all the predictor variables were used allowing for the estimation of the extent to which the outcome is related to one's own and the partner's predictor scores while controlling simultaneously for the effect of both. As suggested with data from distinguishable dyads (e.g., heterosexual couples), gender and the interaction of gender with each actor and partner variable were added as additional predictors (Kenny et al., 2006).

Multilevel modeling was employed to account for interdependence among couple members and their daily observations, using a two-level statistical model for distinguishable dyads (Bolger & Laurenceau, 2013). To predict a) daily positive and negative affect, a general linear mixed model was used. To predict b) daily goal achievement as a dichotomous outcome (0 = no achievement of goal, 1 = successful achievement of goal), a generalized linear mixed model (GLMM) was used that specifies a binary outcome distribution with a logarithmic link function. The effect sizes for GLMMs with a binary outcome distribution are odds ratios (OR).

To examine the within-person effects of daily goal disengagement on outcomes unconfounded with between-person influences, the predictor variable was decomposed into a between-person and within-person predictor. The between-person predictor was computed by calculating the average goal disengagement across all days for each person (Bolger & Laurenceau, 2013). These variables were grand-mean centered to allow for a meaningful interpretation of the intercept. The within-person predictors were calculated by centering goal disengagement at the person mean, resulting in within-person fluctuations around the person-specific mean across the diary days (Bolger & Laurenceau, 2013). A time variable representing the investigated diary days (centered on the first diary day) was included to model linear effects over time. Moreover, the outcome of the previous day (within-person centered) was included as a covariate in all the models. In statistically adjusting for the outcome of the previous day, the effect of goal disengagement cannot simply be due to the fact that the outcome of one day relates to the outcome of the next day. Because outcome reports of the previous day were not available for the first diary day, the first diary day was omitted from the dataset for the main analyses. Furthermore, a maximal random effects structure was specified for each model (Barr, Levy, Scheepers, & Tily, 2013) including random slopes of all within-person predictors. In case of non-convergence, the random effects structure was successively reduced until convergence was met.

For descriptive purposes, reliabilities for the positive and negative affect scales were computed (Cranford et al., 2006; Shrout & Lane, 2012). A between-person reliability R_{KF} (reliability of the average ratings from all items and all days for a given scale measuring whether someone tends to be high or low on a given scale over time) and a within-person reliability R_C (reliability of day-to-day change measuring the proportion of variability due to changes in ratings over time across individuals) were computed (Cranford et al., 2006; Shrout & Lane, 2012).

STUDY 1:

Daily goal disengagement in the context of physical activity in overweight couples

Study 1 examined the link between daily goal disengagement, well-being and behavioral goal achievement in the context of overweight and inactive couples with the goal to become physically active. The sample consisted of couples participating in the control condition of an action control intervention ($N = 61$; receiving a minimal intervention with information only) to promote daily physical activity ('DYACTIC'; for detailed information please see Scholz & Berli, 2014). Results on the intervention as well as more information on recruitment and sampling procedures are reported in detail elsewhere (Berli, Stadler, Inauen, & Scholz, 2016). The project was funded by the Swiss National Science Foundation (PP00P1_133632/1) and approved by the Ethics Committee of the University of Bern, Switzerland (2011-12-36206).

Methods

Participants & Design

Participants were 61 heterosexual adult couples living in a committed relationship for at least one year ($M = 18.0$, $SD = 14.3$ years) and cohabitating for at least 6 months ($M = 15.9$, $SD = 14.5$ years). Both partners were overweight or obese (Body Mass Index [BMI] ≥ 25 kg/m^2), with a mean BMI for women of 30.0 ($SD = 4.2$, Range = 25 - 46) and for men of 30.8 ($SD = 4.1$, Range = 25 - 49). Both were physically insufficiently active, but had the goal to engage in regular physical activity. Mean age was for women 43.4 years ($SD = 13.6$, Range = 22 - 68) and for men 45.1 years ($SD = 13.8$, range 22-72).

Participating couples were invited to the lab where they provided written informed consent and completed an online questionnaire. They received an information leaflet with physical activity recommendations for adults based on guidelines by the Swiss Federal office of Sports at the time of the study (engaging in 30 min or more of at least moderate activity every day, performed in bouts of at least 10 minutes; BASPO, 2009). Subsequently, they were instructed to independently fill in an electronic end-of-day diary on a study smartphone within

one hour of going to bed for a diary period of 28 consecutive days starting the day after baseline. They were asked not to discuss their answers with their partners. Accelerometers were handed out for the assessment of physical activity in both partners across the 28 days. After this period, they returned to the lab to return the devices and complete a follow-up assessment. Each couple was then compensated with CHF 100 (= 97 USD) as financial incentive for study participation.

Measures

Across 28 consecutive days, both partners reported on their daily experience in end-of-day diaries. Overall, the participating couples showed high diary completion rates (n = 3163 [92.6%] of 3416 possible diary days). All items were administered in German; the following item examples have been translated into English. Table 1 gives an overview on the descriptive statistics of the variables of interest.

Daily goal disengagement was assessed with the item "Today I completely gave up on my goal to be physically active." on a scale ranging from 1 "today not at all true" to 6 "today completely true".

Daily positive and negative affect was assessed using the short form of the Positive and Negative Affect Schedule (Thompson, 2007). Both scales contained five items each. Partners were asked to rate their mood during the day such as "Today I feel excited" for positive affect and "Today I feel distressed" for negative affect on a scale ranging from 1 "today not at all true" to 6 "today completely true". Reliability scores are reported in Table 1.

Daily goal achievement was assessed with triaxial GT3X+ monitors (ActiGraph, Pensacola, FL) worn at the hip during waking hours. For each participant, a sum per day was calculated for the total minutes of moderate-to-vigorous physical activity (>2690 cpm in vector magnitude; Sasaki, John, & Freedson, 2011) that was performed in bouts of at least 10 minutes (ten consecutive minutes of observations had to exceed the moderate intensity cut-point, allowing a maximum of two observations to fall below during that period). From these

scores, consistent with the physical activity recommendations used in the study, days with 30 or more minutes in at least moderate activity (performed in bouts of 10 minutes or more) were coded as 1 (= successfully achieving physical activity recommendations), days with less than 30 minutes were coded as 0 (= not achieving physical activity recommendations). Only days with at least 10 hours of valid wear time were included in the analyses (n = 2841 [83.2%] of 3416 possible diary days), with non-wear time filtered based on an algorithm of ≥ 90min of consecutive zeros in vector magnitude (Choi, Liu, Matthews, & Buchowski, 2011). For more details on data processing see Berli et al. (2016). To adjust for the potential impact of varying levels of wear-time, hours of *device wear-time* per day (centered around the grand-mean) served as a covariate in the analysis on behavioral goal achievement.

(*Table* 1)

Results

We hypothesized that goal disengagement on a given day would predict a) better well-being (higher positive affect and lower negative affect), and b) lower goal achievement (achieving the physical activity recommendations of ≥ 30 min moderate-to-vigorous activity in bouts of at least 10 min) that same day. Complete statistical results are reported in Table 2.

Effects of goal disengagement on daily positive and negative affect

As expressed by the intercept, the average level of *positive* affect on the first diary day (when all covariates equal zero) was 3.66 on a scale from 1 to 6. Contrary to our hypothesis, a significant negative actor effect emerged: On days with higher goal disengagement than usual (1-unit increase above person-specific mean), the average participant reported a lower level of *positive* affect, b = -0.06, 95% confidence interval [-0.09, -0.03], $p < .001$. This actor effect differed significantly between men and women (b = 0.06 [0.02, 0.09], $p < 0.01$) to the extent that this negative association was less pronounced for male than for female partners. No partner effect emerged for men and women, indicating that partner's goal disengagement did

not predict *positive* affect that same day over and above participants' own goal disengagement, b = -0.01 [-0.03, 0.01], p = .236.

Results were comparable for *negative* affect. The average level of *negative* affect on the first diary day (when all covariates equal zero) was 1.84 on a scale from 1 to 6. On days with higher goal disengagement than usual (1-unit increase above person-specific mean), the average participant reported a higher level of *negative* affect, b = 0.04 [0.02, 0.06], p < .001 (actor effect). Again, this association was less pronounced for male than female partners, albeit only marginally significant (b = -0.03 [-0.06, 0.002], p = 0.072). In contrast to *positive* affect, for *negative* affect a marginal partner effect emerged, b = 0.01 [-0.001, 0.03], p = .060. Higher daily goal disengagement in partners predicted higher *negative* affect that same day over and above participants' own goal disengagement. This partner effect did not differ for men and women.

The random effects revealed that there was considerable variation between individuals in their average level of positive and negative affect (random intercept), and the extent to which one's own goal disengagement was associated with positive and negative affect (random slopes for actor effect).

Effects of goal disengagement on daily goal achievement

As expressed by the intercept, the average likelihood of goal achievement on the first diary day (when all covariates equal zero) was 16.0%, OR = 0.19 [0.13, 0.28], p < .001. In line with our hypothesis, results revealed a negative actor effect: On days with higher goal disengagement than usual (1-unit increase above person-specific mean), participants were less likely to achieve the physical activity recommendations, OR = 0.54 [0.45, 0.62], p < .001. This corresponds with a decrease in the likelihood of goal achievement by 6.8% from 16.0% to 9.2%. A marginal significant difference between men and women emerged (OR = 0.75 [0.54, 1.03], p = .075) to the extent that the negative association was less pronounced for women than for men. Moreover, a significant partner effect emerged, OR = 0.88 [0.79, 0.98],

$p < .05$. This indicates that higher goal disengagement in partners on a given day predicted a lower likelihood to achieve the physical activity recommendations that same day over and above participants' own goal disengagement (corresponding with a decrease by 1.7% from 16% to 14.3%). This partner effect did not differ for men and women.

Again, the random effects revealed considerable variation between individuals in their average level of goal achievement (random intercept). Moreover, individuals differed in the extent to which own and partner goal disengagement was associated with goal achievement (random slopes for actor and partner effect), and how different these associations were for men and women (random slopes for gender interactions with actor and partner effect).

(*Table* 2)

Summary & Discussion

To summarize, results of Study 1 showed that in couples aiming to engage in regular physical activity, one's own higher goal disengagement on a given day was associated with less positive and more negative affect that same day, especially in women. At the same time, one's own higher goal disengagement was associated with a reduced likelihood for goal achievement (i.e., to achieve the daily physical activity recommendations), especially in men. Moreover, higher daily goal disengagement in one's partner contributed to increased levels of one's own negative affect, and a decreased likelihood of one's own goal achievement.

Overall, these results suggest that disengagement from physical activity goals in daily life may not only be closely related with a lower chance to achieve that goal, but also come along with a reduced level of well-being. Interestingly, these processes might even play out differently for male and female partners. While women show stronger negative reactions in terms of well-being, men tend to show stronger negative reactions in terms of the behavior itself. Recent research for example showed that women do not necessarily experience more frequent or stronger emotions, but are in particular more emotionally expressive about their subjective experience than men (cf., Deng et al., 2016). The present findings further suggest

that one's partner's goal disengagement can also affect how one feels and performs when initiating a positive behavior, emphasizing the relevance of couple-level influence in health behavior change. However, to understand the self-regulatory relevance of goal disengagement in health behavior change in general, it should be tested whether the effects of daily goal disengagement can be extended from a context in which a positive health behavior is initiated (e.g., physical activity) to a context in which an unhealthy behavior is abandoned (e.g., smoking cessation).

STUDY 2:

Daily goal disengagement in the context of smoking cessation in dual-smoker couples

Study 2 examined the link between daily goal disengagement, well-being and behavioral goal achievement in the context of smoking cessation. It was part of a larger project with a prospective longitudinal design investigating individual self-regulation and dyadic exchanges in dual-smoker couples around a joint self-set quit date. For more details about the design, recruitment strategies, inclusion criteria and sample characteristics, please see Lüscher & Scholz (in press), or Lüscher, Stadler, and Scholz (2017). The project was funded by the Swiss National Science Foundation (PP00P1_133632/1) and approved by the Ethics Committee of the University of Bern, Switzerland (2011-11-14409).

Methods

Design and Participants

Participants were 83 heterosexual adult dual-smoker couples living in a committed relationship for at least one year (M = 12.68, SD = 12.79 years) and cohabitating for at least 6 months (M = 11.00, SD = 13.00 years). Both partners smoked at least one cigarette daily and had the goal to quit smoking on a joint self-set quit date during the study. Mean age was for women 38.5 years (SD = 14.6, Range = 19 - 68) and for men 40.7 years (SD = 14.5, Range = 20 - 71).

Participating couples were invited to the lab where they provided written informed consent and completed an online questionnaire of socio-demographic data. For 32 consecutive diary days, couples reported daily experiences in end-of-day diaries around the joint self-set quit date using study provided smartphones (one for each partner). Couples were instructed to fill out the daily survey each night within one hour of going to bed separately from each other, starting 10 days before the quit date and 21 days afterwards. They were asked not to discuss their answers with their partners. The present analyses focused on the quit date day and the following 21 days to capture effects of daily goal disengagement during the joint quit attempt. After this period, participating couples returned one month after the joint quit attempt to the laboratory for a follow-up and completed biochemical verification of smoking status with a carbon monoxide test of expired air (West, Hajek, Stead, & Stapleton, 2005). Dual-smoker couples were compensated with CHF 100 (= 97 USD) for full participation.

Measures

For 22 consecutive days, both partners of dual-smoker couples reported about their daily experiences in end-of day diaries. Overall, the participating dual-smoker couples showed high diary completion rates (n = 3031 [83.0%] of 3652 possible diary days). All items were administered in German; the following item examples have been translated into English. Table 1 gives an overview on the descriptive statistics of the variables of interest.

Daily goal disengagement was assessed with the item "Today, did you completely give up on your goal to stop smoking?" on a scale ranging from 1 "today not at all true" to 6 "today completely true".

Daily positive and negative affect was assessed using the short form of the Positive and Negative Affect Schedule (Thompson, 2007). Both scales contained five items each. Partners were asked to rate their mood during the day such as "Today I feel excited" for positive affect and "Today I feel distressed" for negative affect on a scale ranging from 1 "today definitely not true" to 6 "today completely true". Reliability scores are reported in Table 1.

Daily goal achievement was assessed with the item "Did you smoke today (including only one puff)?" Response format was yes (0 = no achievement of smoking abstinence) and no (1 = successful achievement of smoking abstinence).

Results

We hypothesized that goal disengagement on a given day would predict a) better well-being (higher positive affect and lower negative affect), and b) lower goal achievement (successful smoking abstinence) that same day. Complete statistical results are reported in Table 3.

Effects of goal disengagement on daily positive and negative affect

As expressed by the intercept, the average level of *positive* affect on the quit date (when all covariates equal zero) was 3.59 on a scale from 1 to 6. Contrary to our hypothesis, a significantly negative actor effect emerged: On days with higher goal disengagement than usual (1-unit increase above person-specific mean), the average participant reported a lower level of *positive* affect, b = -0.04, 95% confidence interval [-0.07, -0.01], $p < .01$. This actor effect did not differ between men and women. No partner effect emerged for men and women, indicating that partner's goal disengagement did not predict *positive* affect that same day over and above participants' own goal disengagement (b = -0.003 [-0.03, 0.03], p = .83).

These results were not entirely supported with *negative* affect. The average level of *negative* affect on the quit date (when all covariates equal zero) was 2.16 on a scale from 1 to 6. In contrast to *positive* affect, for men and women one's own goal disengagement on a given day did not significantly predict *negative* affect that same day (b = 0.002 [-0.02, 0.03], p = .89) (actor effect). Again, no partner effect emerged for men and women, indicating that partner's goal disengagement did not predict *negative* affect that same day over and above participants' own goal disengagement (b = 0.02 [-0.01, 0.04], p = .19).

The random effects revealed that there was considerable variation between individuals in their average level of positive and negative affect (random intercept). There was not

enough variance for the estimation of the random slopes of own and partner goal disengagement.

Effects of goal disengagement on daily goal achievement

As expressed by the intercept, the average likelihood of goal achievement on the quit date (when all covariates equal zero) was 41.6%, *OR* = 0.72 [0.21, 2.39], *p* = 0.59. In line with our hypothesis, results revealed a negative actor effect: On days with higher goal disengagement than usual (1-unit increase above person-specific mean), participants were less likely to not smoke *OR* = 0.58 [0.39,0.88], *p* < 0.01. This corresponds with a decrease in the likelihood of goal achievement by 12.3% from 41.6% to 29.3%. No difference was found between men and women. No partner effect emerged for men and women, indicating that partner's goal disengagement did not predict goal achievement that same day over and above participants' own goal disengagement *OR* = 0.98 [0.70, 1.37], *p* = 0.91.

Again, the random effects revealed considerable variation between individuals in their average level of goal achievement (random intercept). Moreover, individuals differed in the extent to which own and partner goal disengagement was associated with goal achievement (random slopes for actor and partner effect) and how different these associations were for men and women (random slopes for gender interactions with actor and partner effect).

(*Table* 3)

Summary & Discussion

To summarize, results of Study 2 showed that in couples aiming to quit smoking on a joint self-set quit date, one's own higher goal disengagement on a given day was associated with less positive affect, but not with more negative affect that same day. At the same time, one's own higher goal disengagement was associated with a reduced likelihood for goal achievement (i.e., successful smoking abstinence). Furthermore, no partner effects for both outcomes were found.

Overall, reflecting closely the results of study 1, these results suggest that disengagement from the goal to quit smoking from a joint quit date on with a romantic partner may not only be closely related with a lower chance to achieve that goal, but also come along with a reduced level of well-being in daily life. However, only the within-person association between goal disengagement and positive affect reached statistical significance. This is rather surprising given that goal disengagement is theoretically assumed to serve mostly to relieve distress in unattainable goals (Wrosch et al., 2013). Smoking cessation is likely a highly stressful event for the participating dual-smoker couples and it is expected to be associated with high distress as shown by the intercept of negative affect (2.16). However, positive and negative affect are distinctive dimensions but often negatively correlated (cf., Pressman & Cohen, 2005; Watson, 1988). According to Pressman and Cohen (2005) positive affect could provide benefits independent to levels of negative affect which may be the case in Study 2. Therefore, this highlights the relevance to focus on positive affect as a positive correlate of well-being as well as on negative affect and distress as negative correlates of well-being when examining goal disengagement (cf., König et al., 2010; Wrosch & Sabiston, 2013).

OVERALL DISCUSSION

Two dyadic daily diary studies have been presented focusing on behavior-specific goal disengagement, well-being and behavioral goal achievement in overweight couples with the goal to become physically active (Study 1) and dual-smoker couples with the goal to quit smoking from a joint self-set quit date on (Study 2). This study is unique as it investigates the role of goal disengagement on a day-to-day basis (using a within-person perspective), in the context of two specific health behaviors, and within a dyadic framework of romantic couples. We specifically tested whether an individual's own higher goal disengagement would predict a) better well-being (positive and negative affect), and b) lower behavioral goal achievement (achieving physical activity recommendations in Study 1; achieving smoking abstinence in Study 2), referred to as *actor* effects. Moreover, we exploratively tested for *partner* effects

(i.e. whether individuals' partners' goal disengagement would predict individuals' own outcomes over and above their own goal disengagement).

Across both studies, findings consistently suggest that on a daily level, individuals' own goal disengagement related to lower subjective well-being and a lower likelihood for goal achievement in each individual. Overall, these results do not support our hypothesis that goal disengagement can serve as an adaptive self-regulation strategy for well-being. Rather, it stands in contrast with previous literature on goal disengagement capacity that has been found to be associated with reduced levels of distress (cf., Miller & Wrosch, 2007; Wrosch et al., 2007; Wrosch & Sabiston, 2013; Wrosch et al., 2003). However, the unfavorable effects of daily goal disengagement on well-being are congruent with König et al. (2010) on daily goal adaptation in the work context. Extending these findings from the work to the health context lends support to the authors' hypothesis that goal disengagement may at least on short term produce rather negative affective reactions, and be experienced as a painful process because individuals have to admit that their goals are unattainable. Yet, it seems important to acknowledge that the measures of goal disengagement at the between-person level (a general capacity to give up important personal goals) and the within-person level (daily fluctuations in actual instances of goal disengagement) constitute very different concepts, which do not necessarily need to yield corresponding results (Curran & Bauer, 2011).

One could argue that by using a continuous measure, fluctuations in goal disengagement may not perfectly capture its dichotomous nature. To distinguish our measure of goal disengagement from the related construct of intention strength (Inauen et al., 2016), we calculated within-person correlations between daily goal disengagement and daily intention. Across both studies, correlations were negative but small. Furthermore, when adding intention as an additional predictor the effects of goal disengagement remained virtually the same in magnitude and significance, indicating that the continuous measure of goal disengagement is conceptually unique, and not merely a reflection of intention strength.

Another explanation for the contrasting results may be that individuals do not immediately reengage in new goals. As Wrosch et al. (2003) pointed out, whether or not self-regulation of unattainable goals is adaptive or not depends heavily on the availability of alternative goals, which may in turn foster new purpose in life and more positive aspects of well-being. In line with this, other studies have documented low well-being for individuals who tend to disengage from unattainable goals without engaging in new goals (Wrosch & Sabiston, 2013). However, empirical evidence provides most support for independent effects of goal disengagement, especially with regard to negative aspects of well-being (Wrosch et al. 2013). Future research on goal disengagement in the context of health behavior should nevertheless consider using a daily measure of goal reengagement to test for potential interactive effects with goal disengagement in daily life.

Further, previous research has focused on different, more broadly defined personal goals than the present studies, which might explain some of the irregular findings. For many people, however, pursuing a positive health behavior change constitutes an important long-term goal in life that poses a considerable challenge at a daily level. Particularly so in samples of overweight individuals and regular smokers for whom a history of failed attempts are not uncommon. Thus, the goals investigated in the present studies do not seem essentially different in nature, and provide a useful context for studying the process of goal disengagement.

Results from the two studies further provide some first insight on the link between the disengagement from specific health behavior goals and the actual performance of that health behavior. The expected negative effect on behavioral goal achievement is relatively pronounced (OR's = 0.53 – 0.58), and supports the notion that goal disengagement involves the withdrawal of *behavioral efforts* and is thus closely linked in time with behavioral achievement. However, we should also keep in mind that behavioral goal achievement may

nurture an individual's sense of how feasible the goal itself is, and thus bidirectional associations seem plausible.

At last, findings on potential *partner* effects of goal disengagement were not consistent across studies. The significant partner effects of daily goal disengagement on goal achievement and (at least in tendency) negative affect found in Study 1, supports the idea that one form of dyadic influence in health behavior change can be ascribed to an individual's self-regulation process impacting on his or her partner's behavior over and above that partner's own self-regulation processes. This extends findings from Howland et al. (2016) on predicting behavioral intentions to engage in physical activity within a couple context, and highlights the fact that romantic partners form interdependent units in which goal pursuit and goal achievement occurs (Fitzsimons, Finkel, & vanDellen, 2015). However, in Study 2 no such partner effects were uncovered. One reason for this inconsistent pattern of results may lie in the difference between adopting health-enhancing behaviors (e.g., becoming physically active) and giving up health-compromising behaviors (e.g., quitting smoking). Adopting a new behavior presents romantic partners with the opportunity to jointly engage in it (e.g., taking walks together, cooking healthy dinners etc.). Consequently, when one partner disengages from the goal, this might jeopardize such joint activities and leave the other partner frustrated. When giving up an unhealthy behavior, jointly not do something is rather difficult. As such, it seems possible that the decision of one person not to pursue this goal may have less impact on the partner's outcome in the context of giving up an unhealthy behavior. Another possibility for why partner effects were largely absent or weak, could be that there is heterogeneity in such dyadic influence. For example, Howland and colleagues (2016) found that relationship quality served as a moderator of some of the partner effects when predicting individual's physical activity intentions. Similarly, the effect of one's partner's goal disengagement may be more pronounced in individuals that are themselves low in self-regulation competences or tend to outsource self-regulatory effort to partners (e.g.,

Fitzsimons & Finkel, 2011) and thus, depend more on their partner. Such possibilities should be further investigated. Lastly, when investigating individual-level processes, partner effects are assumed to be small in size, and may thus more generally be hard to find (Kenny et al., 2006).

Strengths and Limitations

The present research has several strengths. Both studies collected intensive longitudinal data with daily diaries which is advantageous in providing a more accurate report of life as it is lived (e.g., reducing retrospection bias; Bolger, Davis, & Rafaeli, 2003). Also, the daily assessments allowed us to understand the effects of goal disengagement on well-being and goal achievement within each individual (i.e., within-person level). Moreover, we applied a dyadic perspective by examining independent reports from both partners of heterosexual, romantic couples. This enabled us to study potential couple-level influence of individual-level self-regulation processes in health behavior change, as has previously been called for (e.g., Pietromonaco, Uchino, & Schetter, 2013). We established the associations between daily goal disengagement, well-being and goal achievement across two different health behaviors (i.e., adoption of physical activity, quitting smoking). An additional strength lies in the behavioral assessment of goal disengagement. In study 1, we used an objective measure of accelerometers that did not provide participants with feedback on their activity, and this should thus not have biased participants' perceptions of their goal disengagement. While Study 2 did not employ an objective measure of smoking abstinence at the daily level, participants' reports of smoking abstinence was biochemically verified with a CO test of expired air (West et al., 2005) following the diary period. All participants reporting continuous abstinence one month after the joint quit date, were identified as non-smokers by the objective point prevalence measure.

Some limitations need to be acknowledged. First, in both studies goal disengagement was assessed with a single item to keep the daily diary short and participant burden low.

However, the negative associations with behavioral goal achievement across both studies give indication for a valid and useful assessment of behavior-specific goal disengagement via the single-item self-report. Second, no conclusion about the predictive direction can be drawn. For example, it is also possible that people disengage from a goal when they are in a bad mood (cf., Louro, Pieters, & Zeelenberg, 2007). To establish causality, an experimental design is needed. Future research should consider ways in which goal disengagement in daily life could be experimentally manipulated.

Conclusions

In sum, the present studies demonstrate that withdrawing effort and commitment from a specific health-related goal, i.e. goal disengagement, in daily life may not only be closely linked with lower well-being , but also create a barrier for the individual's goal pursuit in the context of health behavior change. Further, they provide first insight that goal disengagement may also be of relevance at the dyadic level of romantic couples; however, dyadic effects were not consistent and might thus be more context-sensitive. Future research should continue to study goal disengagement as a self-regulation process in health behavior change in daily life, and target different health-related contexts of particular relevance to couple's everyday life.

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Table 1

Descriptive statistics of variables of interest

	N	*n*	*M*	SD_W	R_{KF}	R_C
Study 1: Adopting physical activity						
1. Daily goal disengagement	61 (=122)	3163	2.82	1.10	-	-
2. Daily positive Affect	61 (=122)	3163	3.61	0.60	0.99	0.76
3. Daily negative Affect	61 (=122)	3163	1.86	0.47	0.99	0.69
4. Daily goal achievement	61 (=122)	2841	0.21	0.30	-	-
Study 2: Quitting smoking						
1. Daily goal disengagement	83 (=166)	3031	2.00	0.72	-	-
2. Daily positive Affect	83 (=166)	3031	3.61	0.64	0.98	0.72
3. Daily negative Affect	83 (=166)	3031	2.12	0.57	0.99	0.71
4. Daily goal achievement	83 (=166)	3031	0.50	0.17	-	-

Note. N = number of couples (individuals), n = number of available diary days. We reported the means of the person-specific mean levels *(M)* and the average within-person standard deviation (SD_w). R_{KF} = between-person reliability; Rc = within-person reliability.

Table 2 *Parameter estimates from mixed models testing the within-person effects of daily goal disengagement on a) positive and negative affect, and b) goal achievement in the context of physical activity (Study 1)*

	a) Linear mixed models:				b) Generalized linear mixed model:			
	Daily positive affect		*Daily negative affect*		*Daily goal achievement*			
Fixed effects	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	*OR*	Probability (%)[c]
Intercept	3.66***	0.06	1.84***	0.06	-1.66***	0.20	0.19	16.0
Gender	-0.02	0.13	-0.19*	0.09	-0.17	0.27	0.85	-2.1
Time	-0.004	0.003	0.001	0.003	-0.02*	0.01	0.98	-0.3
Gender x Time	-0.01**	0.004	0.01	0.005	0.04*	0.01	1.04	0.5
Mean goal disengagement	0.02	0.05	0.04	0.05	-0.02	0.12	0.98	-0.2
Gender x Mean goal disengagement	0.30**	0.09	0.09	0.10	0.28	0.26	1.32	4.1
Partner's Mean goal disengagement	-0.07	0.05	-0.05	0.05	-0.02	0.12	0.98	-0.3
Gender x Partner's mean goal disengagement	-0.01	0.09	0.02	0.10	0.03	0.27	1.03	0.4
Previous day outcome	-0.12***	0.02	-0.11***	0.03	-1.05***	0.17	0.35	-9.8
Gender x Previous day outcome	-0.05	0.04	-0.01	0.04	0.16	0.36	1.17	2.2
Device wear-time (in hours)					-0.05	0.04	0.95	-0.7
Goal disengagement	-0.06***	0.01	0.04***	0.01	-0.64***	0.08	0.53	-6.8
Gender x Goal disengagement	0.06**	0.02	-0.03†	0.02	-0.30†	0.17	0.75	-3.6
Partner's Goal disengagement	-0.01	0.01	0.01†	0.01	-0.13*	0.06	0.88	-1.7
Gender x Partner's goal disengagement	-0.004	0.02	-0.01	0.02	0.02	0.08	1.02	0.3
Random effects ([co-]variances)[a]								
Level 2 (between-person)								
Intercept	0.15***	0.04	0.19***	0.04	1.50***	0.40		
Gender	0.77***	0.16	0.36***	0.10	1.46**	0.46		
Time	0.003**	< 0.001	< 0.001**	< 0.001	0.002*	0.001		
Gender x Time[b]	-	-	0.001*	< 0.001	-	-		
Previous day outcome	0.01***	0.01	0.01*	0.006	0.37	0.29		
Gender x Previous day outcome [b]	-	-	-	-	2.20†	1.20		
Device wear-time					0.03*	0.02		
Goal disengagement	0.01**	0.002	0.001†	0.001	0.17*	0.07		
Gender x Goal disengagement[b]	-	-	-	-	0.73*	0.29		
Partner's Goal disengagement[b]	-	-	-	-	0.07*	0.04		
Gender x Partner's Goal disengagement[b]	-	-	-	-	-	-		
Level 1 (within-person)								
Residual	0.47***	0.02	0.31***	0.01	0.65***	0.02		
Autocorrelation	0.35***	0.04	0.31***	0.04	0.11**	0.04		

Note. $N = 61$ couples with a maximum of 27 days, $n = 2731$ (goal achievement), 3044 (positive and negative affect) available days. *SE* = standard error. Gender was coded: Female = -0.5 and Male = 0.5. Daily goal achievement was coded: Not achieving the physical activity recommendation = 0, Achieving the physical activity recommendation = 1. [a] In models a), covariances between all random effects were estimated, but for the sake of brevity, are not shown. In model b), no covariances could be estimated due to non-convergence. [b]Due to non-convergence, some of the random effects could not be computed. [c]For better interpretation, odd ratio's were converted into probabilities (%). $^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Table 3 *Parameter estimates from mixed models testing the within-person effects of daily goal disengagement on a) positive and negative affect, and b) goal achievement in the context of smoking cessation (Study 2)*

	a) Linear mixed models: *Daily positive affect*		*Daily negative affect*		b) Generalized linear mixed model: *Daily goal achievement*			
Fixed effects	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	OR	Probability (%)[c]
Intercept	3.59***	0.07	2.16***	0.07	-0.34	0.61	0.72	41.6
Gender	0.30**	0.12	-0.21†	0.12	-0.83	0.62	0.44	-17.9
Time	0.003	0.003	-0.01*	0.002	-0.01	0.04	1.00	-0.2
Gender x Time	-0.003	0.01	0.004	0.01	-0.01	0.06	1.00	-0.2
Mean goal disengagement	0.01	0.05	-0.01	0.05	-1.33***	0.41	0.27	-25.7
Gender x Mean goal disengagement	0.01	0.10	-0.01	0.11	-0.37	0.94	0.69	-8.6
Partner's Mean goal disengagement	-0.09*	0.05	-0.01	0.05	-0.63	0.40	0.53	-14.1
Gender x Partner's mean goal disengagement	0.01	0.10	0.10	0.11	0.74	0.91	2.09	18.3
Previous day outcome	-0.11***	0.03	0.08*	0.03	0.08	0.46	1.09	2.0
Gender x Previous day outcome	0.03	0.05	0.11†	0.06	0.20	0.54	1.22	4.9
Goal disengagement	-0.04**	0.01	0.002	0.01	-0.54**	0.21	0.58	-12.3
Gender x Goal disengagement	0.03	0.03	0.001	0.02	0.03	0.39	1.03	0.7
Partner's Goal disengagement	-0.003	0.01	0.02	0.01	-0.02	0.17	0.98	-0.5
Gender x Partner's goal disengagement	-0.01	0.03	-0.02	0.03	0.10	0.33	1.10	2.5
Random effects ([co-]variances)[a]								
Level 2 (between-person)								
Intercept	0.24***	0.04	0.37***	0.06	23.90***	4.84		
Gender	0.59***	0.12	0.81***	0.14	12.58***	3.18		
Time[b]	-	-	-	-	0.08***	0.02		
Gender x Time[b]	-	-	-	-	0.09***	0.03		
Previous day outcome	0.02*	0.01	0.04**	0.01	5.43**	1.93		
Gender x Previous day outcome	0.01	0.03	0.11*	0.05	2.80	1.72		
Goal disengagement[b]	-	-	-	-	0.93*	0.38		
Gender x Goal disengagement[b]	-	-	-	-	2.68*	1.11		
Partner's Goal disengagement[b]	-	-	-	-	0.51*	0.24		
Gender x Partner's Goal disengagement[b]	-	-	-	-	1.84†	0.95		
Level 1 (within-person)								
Residual	0.50***	0.03	0.34***	0.01	0.20***	0.01		
Autocorrelation	0.37***	0.04	0.22***	0.06	0.02	0.04		

Note. N = 83 couples with a maximum of 22 days, n = 2912 available days. SE = standard error. Gender was coded: Female = -0.5 and Male = 0.5. Daily goal achievement was coded: No achievement of quitting smoking = 0 and Successful achievement of quitting smoking = 1. [a]In models a, covariances between all random effects were estimated, but for the sake of brevity, are not shown. In model b, no covariances could be estimated due to non-convergence. [b]Due to non-convergence, some of the random effects could not be computed. [c]For better interpretation, odd ratio's were converted into probabilities (%). $^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$